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## Hare, Jonathan ~ Oral History Interview

Madeleine Hall-Arber

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Voices from the Fisheries  
166 Water Street  
Woods Hole, MA 02543

## **Interview with Jonathan (Jon) Hare by Madeleine Hall-Arber**

*Summary Sheet and Transcript*

### **Interviewee**

Hare, Jonathan

### **Interviewer**

Hall-Arber, Madeleine

### **Date**

July 29, 2016

### **Place**

Narragansett, RI

### **ID Number**

VFF\_NG\_JH\_001

### **Biographical Note**

Jonathan (Jon) Hare was born and raised in upstate New York. He completed his graduate work at SUNY Stony Brook. His dissertation focused on bluefish (*Pomatomus saltatrix*). He completed his post-doctoral work at the NMFS lab in Beaufort, North Carolina working on recruitment dynamics of several species. After seven years, he moved to the Narragansett Lab in 2005 where he became head of the Oceanography Program, a position he still holds as of this interview.

### **Scope and Content Note**

Interview contains discussions of: oceanographic data, research vessels, zooplankton, menhaden, plankton, budget issues, climate variability and change, mathematical and statistical models, Atlantic river herring, ocean acidification, paradigm shift back to ecosystem, and cooperation between researchers.

### **Indexed Names**

Abbott-Jamieson, Susan

Bahr, L.M.

Baird, Spencer

Beardsley, Robert

Bigelow, Henry

Chen, Changsheng

Colburn, Lisa

Collie, Jeremy

Cowen, Bob

Fahey, Michael  
Goode, George  
Govoni, Jeff  
Guilmette, Ron  
Hardy, Alister  
Hoey, John  
Kendall, Art  
Mountain, David  
Pinto da Silva, Patricia  
Sette, Oscar  
Walford, Lionel

### **Transcript -001**

**Madeleine Hall-Arber:** It should be recording. So if you could just speak and make sure it is the right volume.

**Jonathan Hare:** My name is Jon Hare and I work for National Oceanic and Atmospheric Administration.

**MHA:** Good. Can you give me your date of birth?

**JH:** 12/30/65.

**MHA:** And place?

**JH:** Rochester, New York

**MHA:** Is that where you grew up?

**JH:** Yuh. I grew up a little bit outside of Rochester.

**MHA:** When did you first develop an interest in marine science?

**JH:** I grew up in upstate New York so I was quite a way from the ocean, but every summer we spent two weeks in Martha's Vineyard. That was our vacation, our summer vacation. So we would all pack up in the station wagon and drive and spend two weeks, and then drive home. So interested in the ocean from that point. In terms of marine science, when I started college, I wanted to be a doctor. I didn't really know many options. But then took a basic benthic marine habitat course in college sort of as a class to take and I was fascinated by it. So then I sort of made a switch from going to medical school to thinking about making a career in marine science work.

**MHA:** You said all of us packed up so you have...

**JH:** Yeah, a brother and a sister, my parents and then for a number of years, we had friends who would come with us. So, it was six or seven people in the station wagon.

**MHA:** Fun

**JH:** Exactly, memorable.

**MHA:** As you know, what we are trying to do is look at NMFS before, middle, now, and future to get the whole range.

**JH:** OK

**MHA:** I'm going to ask you a little about your history with NMFS and then I'll get into other stuff. So when did you begin working with them?

**JH:** So I did my graduate work at State University of New York at Stony Brook, and I started interacting with Mike Fahey who was with NMFS at the Sandy Hook Lab. That was a very positive interaction. And then my dissertation work was on blue fish. Art Kendall had been a blue fish researcher on the East Coast but had moved to the Alaska Fishery Science Center and we asked him to be on my committee, so. Like I knew about NMFS science and scientists well before I ever thought of working for NMFS. And then when I got my degree, I started applying for post docs. Couple of different options. The best option was a National Research Council post-doctoral award at the NMFS lab in Beaufort, North Carolina. So I went down there, uh, post doc, which is short term. It was a one year post doc renewed for a second year. Then renewed for a third year. Then sort of getting close to the end of the third year, they hired me as a researcher with NMFS.

**MHA:** So what were you working on?

**JH:** So when I was at Beaufort, it was primarily working on recruitment dynamics of Atlantic Menhaden spot, Atlantic croaker, southern flounder. Sort of those estuarine dependent fishes in the southeast US.

**MHA:** Who was supervising you?

**JH:** Uh. When I was in Beaufort, it was Jeff Govoni was my post-doctoral advisor.

**MHA:** Uhum. And then once you were hired, did you work at the Beaufort lab?

**JH:** Yes. I was three years, hired, and we stayed in Beaufort for another seven years. Continued to work with Jeff through those seven years and really started just broadening working with a lot of people in North Carolina region. We did some work off of Georgia and some work in the Gulf of Mexico. Had an opportunity to work in a lot of different places in the southeast.

**MHA:** Now. Since you were working on menhaden, are you being called on now because of...?

**JH:** No --

**MHA:** You moved beyond that?

**JH:** Yeah. We moved beyond that. We have one project now. Ten years ago, we moved up to the Narragansett Lab. Still working for NMFS. Was, now I am head of the oceanography program so oversee all the oceanographic monitoring that NOAA Fisheries does in the region. So we collect a lot of fish larvae so we have one of the scientists in our group is working with researchers from the University of Maryland on menhaden. Menhaden is still in our science portfolio but I'm not directly involved.

**MHA:** I see, And when you moved up here did you apply specifically to be the head of that...

**JH:** No, I came up as a sort of a first level supervisory position. Um and then my supervisor retired so I applied for his position and became, sort of, oversee all the oceanography in the Northeast, and then at

some point I was asked, a couple years ago, was asked to be director of the Narragansett Lab. So those duties accumulated as I was in the Northeast for longer.

**MHA:** Who was the supervisor that retired?

**JH:** Dave Mountain? He retired and moved to Arizona. Hot in Arizona right now.

**MHA:** [Chuckle] I was thinking not exactly a coastal community.

**JH:** No.

**MHA:** Okay So let's see. I was going to ask you what kind of research you were doing before joining the branch but you already mentioned a little bit about it--

**JH:** Uhun

**MHA:** --and then once you moved up to Narragansett, what were you most focused on?

**JH:** When I first came to Narragansett, I was primarily focused on the long-term plankton collections at the Northeast Fisheries Science Center had been doing since the '60s. So there were two large programs. One was a research vessel program where they deployed small plankton nets in conjunction with oceanographic observation and some of the cruises were piggy-backed with trawl survey so it was part of the integrated ecosystem monitoring. The other program was deploying continuous plankton recorders on merchant vessels. Um, a continuous plankton recorder is a mechanical instrument that was developed in the '20s and '30s in the UK by a scientist there, Hardy... Alister Hardy. And the Northeast, they sort of developed around England, the northern Europe area, '30s, '40s, '50s, and in the '60s they tried to expand and cross the North Atlantic. It wasn't even NOAA at that point. It was the Bureau of Commercial Fisheries. So the engagement started there and we started collaborating and sort of working some of the transects that were being sampled on this side of the Atlantic and then sharing data. That continued from '63 until 2013 at which point, our funding, we just couldn't support it any more. So we had to drop that program.

**MHA:** What were your co-workers like at the time? Did they have similar interest as yours?

**JH:** In Narragansett?

**MHA:** Mhmm

**JH:** When I started, I came up in 2005, the average age of the group was 60. So it was, most of the people in the group had been there for a very long time. It was focused on surveying and monitoring where as my focus had always been on research and publishing. So what I tried to do is - the data they were collecting were unique - so trying to work with a number of people in the group to turn the data into a sort of more scientific product that could be applied to assessments or published in the scientific literature.

**MHA:** Did you have any resistance to that?

**JH:** Yeah

**MHA:** [Chuckle] Do you want to elaborate?

**JH:** Change is hard so I put a majority of the resistance to someone coming in and saying we need to do something different and so there was some resistance, but it wasn't insurmountable by any stretch.

**MHA:** And do you feel like things have radically changed since then?

**JH:** In one sense yes, but in the other sense, no. So the research vessel program -- we are having some budget struggles but that remains our fundamental activity. And so we have been able to maintain support for that. We lost some support two years ago but we've been building back some so we're getting close to where we were when I came here in 2005. So that part of what I do, what our group does, hasn't changed. So now I'm Branch Chief so there's also the oceanographic observations that have been part of this sampling since it was conceived, but initially you have a wire and you put instruments in the water on the same wire and it would come up and the oceanographic data would go to Woods Hole and go into their database and the zooplankton data would come to Narragansett and go into their database. And the larval fish data would go to Sandy Hook and go into their database. And never the three met again.

**MHA:** [Chuckle]

**JH:** So one of the exciting things has been bringing those three data sets together since they're collected together and then we're starting to be able to analyze those three pieces of data but analyze them together. The continuity of the sampling, I think, is one of our strengths. And, you know, when I started in 2005 the average age was 60 so we've had a lot of turnover. We're about 50% smaller than we were in 2005. But the hires that we have had are very energetic and active. So we've made good hiring choices. But we just getting for every two that are retiring, we're getting about one back.

**MHA:** Is that because of budgeting?

**JH:** Yeah

**MHA:** So about science, the state of science now. You mentioned all this data was going into separate bins, and you're trying to bring it together. When did that happen?

**JH:** We've been trying to... When I got here, the Branch Chief at the time was, had started bringing the oceanographic and the zooplankton data together. So we still, because the databases had been separate for so long, it seems like it should just be easy, but it's not. That had started. We still have some work to do in that element. And the ichthyoplankton data was in a very different database structure. So we were working with them in parallel for a number of years, trying to pick the right time to recommend bringing them together. So that started probably three years ago and they are now in the same data base. There's a student at URI who is working with a joint plankton database to look at zooplankton and macro larvae in combination with the oceanography. That will be the first project really which is taking advantage of this joint database.

**MHA:** How about the sort of ocean data collection that's being done outside of NOAA?

**JH:** Yeah, so the region, we're fortunate to have a lot of research institutions active in the area. NERACOOS, MARACOOS which is the mid-Atlantic equivalent - they collect only physical data. And NERACOOS is primarily moorings. MARACOOS is primarily gliders and that's sort of the history of the program that developed into those regional observing systems. You can really see the history of the science in those two different programs. We interact with them some, but we're not well integrated. The Northeast Fishery Science Center has recently put out for public comment a regional action plan to

support the NOAA Fisheries climate science strategy and one of the actions that is identified there is to bring the regional observing programs and capacity together and really start thinking about a regional plan as opposed to each institution or each activity having its' own plan. So that's something hopefully we'll have the opportunity to do in the next year or two.

**MHA:** It sounds like it's likely to be challenging if it was hard to get the three streams of data you collected together. How are you going to evaluate, I guess, the quality of the data and, maybe, the utility of it?

**JH:** I don't think we can go into it from a perspective of let's figure out what we can stop. Because that's not the way to get people to come to the table. I think go into it with the framework, what can we all benefit by working together more closely. That approach at a regional level really hasn't been taken up. Even the regional ocean observing systems, they are regional but their funding has been largely flat so there's really been no way for any new ideas or new sampling to be added. There has been a little bit, they've made some changes, some slight modification, but because those programs aren't growing, they really can't take on biological observations. Our programs aren't growing so we can't take on mooring so what we really need to do is figure out how to work together and better mesh, use the strengths of NERACOOS, MARACOOS and the Northeast Fisheries Science Center and other observing systems in the region and try to patch together something which works better than what we have now.

**MHA:** And how about all the universities? Are some of the Universities contributing?

**JH:** Yes. NERACOOS and MARACOOS, they're non-profit so NOAA IOOS funds NERACOOS and MARACOOS and then NERACOOS funds entities and I don't know what their budget is but a lot of NERACOOS funding, a lot of MARACOOS funding, goes to universities. Universities also have other, universities and research institutions, you know Woods Hole Oceanographic Institution, technically not a university, it's a research institution. They have other observing activities that don't fall under NERACOOS or MARACOOS. There's a big program, the ocean observing initiative, OOI, which is NSF funded run out of Woods Hole. Rutgers is involved in terms of some of the data. They're just getting - they've been in the water for about a year now, but they're really scaling up. It's going to be about a ten year project. So, that's outside of the NOAA supported ocean observing system. There's other smaller activities as well. Universities are part of NERACOOS and MARACOOS but then they also have their stand-alone sort of activities that are funded by a variety of different sources.

**MHA:** And is there a general plan to try to...

**JH:** Not to date. And so that's one of the needs that we identified in the regional action plan, the NMFS climate science strategy. At least start having conversations about how we could work better together.

**MHA:** Is that a change you would say is true for NOAA in general that in the past there's been much more separation between the work going on at the science centers and other groups?

**JH:** Yeah, I mean, I'm not sure if it goes as far as marine sciences in general but I might take it that far. But I think there's a lot more effort and interest in working across disciplines and working across organizations than there used to be.

**MHA:** Why do you think that is?

**JH:** Part, it's forced by budget. Uhm, but I also think that many of the questions that we're struggling with truly are interdisciplinary. And so you have to work across to answer the question that you want to address.

**MHA:** What would you say is the most influential scientific theory that's guided your own research?

**JH:** I'd have to...the idea... Well, I'll answer that two different ways. A sort of a more practical day-to-day that fish population dynamics are driven by recruitment - the survival of early life stages coming into an adult population and sort of determining the abundance patterns for as long as the adults are alive. And then that's modified greatly by fishing. If you fish something really hard, you sort of push the age structure down and take those young fish out fast. If you fish it less hard, you know the age structure expands and you're taking fish out at a slower rate. But the number is determined by recruitment in early life stages, and there are different hypotheses out there and then there are sort of nuances about which stages and which processes are important in determining recruitment. But from a practical day-to-day that would be an influential theory. But on a broader sense, I'd have to say the theory of evolution, I think most of biology touches somewhere along the way back those ideas, biological systems species are ever changing, adapting to the current conditions, being forced through natural selection into possibly different places than they are now. In a broader sense that has been very important in my career.

**MHA:** Do you see any sort of major paradigm shift in what has happened over the time you have been...

**JH:** Well yeah. One major, I think we're right in the middle of it still, is that this idea that fish populations are not driven solely by fishing. So much of our management of fish is based on the idea that if we want a population to grow in abundance, we just decrease fishing. And if we've got plenty of fish out there, we just increase fishing. If you think about that as a hypothesis, that hypothesis has been disproven multiple times. So now we know that there are other things involved in determining the abundance of fish. It's not fishing alone. Climate, long-term climate variability, climate change is one factor, and it's an important factor. Species interactions is another factor, an important factor. The sort of the social and economic aspects of fishing and market forces is another factor. And then habitat quality, habitat quantity is a fourth factor. So the paradigm shift used to be simple, just decrease fishing and everything will get better. But now, it's much more complicated and we need to figure out how to sort of work across those multiple factors to try to develop long-term sustainable fisheries in the face of fishing, climate change, species interactions, and changes in habitat.

**MHA:** So do you think that that shift... I guess I should ask when do you think people started to become more aware of that?

**JH:** Well, I think that, it would be which people. If you look back at the history of the Northeast Fisheries Science Center, the Spencer Baird, Oscar Sette, Walford. I think they knew that but for some reason we, sort of, lost the historical ecosystem perspective and narrowed in very focused very closely on this fishing issue. Now I think that hypothesis has been disproven multiple times. We're sort of taking a broader look and realizing the experience of our predecessors, that they had taken an ecosystem approach in the '10s, '20s, '30s, '40s, '50s, '60s, but we narrowed in too closely on fishing and now we're sort of coming back and relearning the things that they already knew.

**MHA:** When did it switch from the Bureau of Fisheries, was it?

**JH:** I think it was like '70 or '72. It was during Nixon's administration.



**MHA:** Just before the Magnuson Act.

**JH:** Yeah The Magnuson Act was '76 the first time? Yeah. So it was just before. A couple of years before.

**MHA:** I would think that George Goode would also be among those people

**JH:** Yeah. Exactly. Goode I would classify him as more of an ichthyologist. Someone who really knew fish and fishes and fish biology. The Sette and the Walford and the Bigelow and the Baird I would classify as more fisheries biologists or ecologists, but I could be mistaken.

**MHA:** Um. All right. Let's see. So did the advent of mathematical and statistical models affect the way your analysis is done or the center's analysis?

**JH:** Well, mathematical and statistical models and then the computing power to use those to great effect. Certainly. The stock assessment models that we use now are extraordinarily complicated. They are mathematically and statistically very complicated and require computers to fit them and come up with output and then, that's on the fisheries side. On the oceanographic side, yes, the ability to model the ocean is a combination of math and computing power. So yeah, it's really opened the door dramatically.

**MHA:** What has that done to some of the older people who might still be around? Has that affected their ability to do useful analysis?

**JH:** Yeah, I mean I guess in part for those people who didn't, you know, these new techniques developed and they didn't learn them and start using them, I think in a sense they were left behind, but I think on the flip side, um, I think they kept their broad perspective and didn't get led down these narrow channels of trying to resolve a specific parameter of the mathematical models. So I think there's still a lot of value of not being a mathematical modeler or a statistician.

**MHA:** And how about the different labs around the country -- do you have a lot of interaction with them?

**JH:** I have a fair amount of interaction. Most of my interaction is in the Northeast. I have worked from the Northeast U.S. to the Caribbean so I have a pretty good handle on the Atlantic side. I haven't, I've never done any work in the Pacific. But I stay in touch with people, primarily NMFS, but some academics in the Pacific, work some with people in the Gulf of Mexico and still have some interaction in the Southeast in my days in Beaufort, so.

**MHA:** Do you see any differences among the different groups either scientifically or in terms of their openness to change?

**JH:** I mean I think, not in terms of scientists in general but in terms of community, I think the idea of climate change receives more resistance in the Southeast. There's many reasons for that, but one, in terms of marine science where it's easier to understand. So in the Northeast, temperatures in the ocean have warmed two degrees over the past fifteen years. One and a half degrees over the past 80 years. The increase in temperature are measurable. In the Southeast, that's not true. So, someone sitting in the Southeast hearing about ocean warming affecting fish distributions and they don't see the ocean warming. So I think that's where some of the questioning comes from and questioning is good for science. We should question everything. So that would be the one region where in terms of climate change in marine science there is more hesitation. West Coast, the climate change signal is not great but that climate variability signal is with the El Nino and the Pacific Decadal Oscillation. They're very familiar with

long-term climate variability. So taking a step to climate change is much easier and for people working in the Northwest and Alaska, the changes in the Arctic have been fast and furious. So I think you're able to see the changes, it's easier to think about it affecting the ecosystem you're working in.

**MHA:** And that's also true for ocean acidification, I think, in the Northwest at least.

**JH:** Yes. Again, it's a nuanced issue though because much of the acidification that they're seeing in the Northwest is up-welling of deeper, older water. So that water is more acidic than it used to be but it's not just a strict ocean acidification issue. It's an ocean acidification and the upwelling of this old, acidified water. And many of these things are not straightforward. But when you try to explain to the general public the more complex and nuanced, they lose the message. So things are often presented more simply than they actually are. The warming in the Northeast it's presented as a climate change, as evidence for climate change but there's something called the Atlantic Multidecadal Oscillation which is a 50 to 90 year cycle. In the past twenty years, we've been in an up cycle so the warming we that have experienced is a combination of long-term climate change and this natural 50 to 90 year cycle. So it's not... Yes, it's changing. Yes, it's climate change but all the warming we have experienced is not attributable to climate change. And that's a complicated argument to try to make. It's easier to say "ah it's climate change."

**MHA:** Have you had any opportunity to work with fishermen?

**JH:** Some. Some to date and I'm looking forward to more in the future. We have one project - river herring - incidental catch of river herring in the Atlantic herring and the Atlantic mackerel fishery is a developing issue. Last year, the year before, they put in hard bycatch caps on those two fisheries and so trying to help the fishing industry avoid river herring is a priority and so we had a project and still working on it to develop habitat models for Atlantic mackerel, Atlantic herring, alewife and blueback herring and then working with oceanographers who have a forecast model, forecast the distributions and then provide those forecasts to industry as a way to help them find the species they are targeting - Atlantic mackerel, Atlantic herring, and avoid the species they are trying not to catch - blueback and alewife. So last winter, we did a test of our model using fishing vessels in the inshore Atlantic herring fishery. So we had ten days and they would go out and we would have them basically sample our model, sample in an area where the overlap was low, where it was high. So that type of work is critical to moving forward on this. We need to involve fishermen, find ways to use their expertise to bring them into the process.

**MHA:** Did you have any trouble convincing..?

**JH:** No. Again, so the Narragansett lab, the Northeast cooperative research program is headquartered out of there, John Hoey is the Director, I think you talked with John when you were down there.

**MHA:** Briefly

**JH:** I mean he, one of his programs is something called Study Fleet and so the vessels that we worked with were all part of Study Fleet. They were all strongly supportive of cooperative research with the science center so it was very easy.

**MHA:** And do you have any direct role in management?

**JH:** No. Uh, I would argue that the science center doesn't either. We provide science to the councils, to the regional office and they are, in fact, the managers. We can evaluate what they are thinking about management, but we are providing the science to support management. And I would argue that's all the

center responsibility, and then I'm even a step further away because I'm not, I work a little in the assessment, the giving of science products to the regional office and to the fisheries management council, but then I also have, a lot of what I do is research or collecting this observation, to collect data to be used in assessments.

**MHA:** So how about anybody, you or anybody else at the center, come up with ideas for adaptive management.

**JH:** Yeah, I mean we all have, you know, providing a model to fishermen to avoid river herring is adaptive management. Um, so there's other activities like that our group is involved in, but I think that we need to be careful to understand that we can develop these ideas and provide the science but our feelings shouldn't be hurt if the people responsible for managing say "no, we don't like that."

**MHA:** Do you feel like the managers that you and the, whoever is providing the science for the council and for other the management systems, do you feel like the managers understand the science?

**JH:** I think so, and if they don't, it's our responsibility to make sure we explain it well enough so that they do understand it. Work that I have done with the council, two councils, the Atlantic State Marine Fisheries Commission, they're very knowledgeable. They know what they're doing. They understand the science. They understand the management. They understand the fishery - same thing with the regional office. So in the Northeast, I think, we're in a good place. We have tough questions and tough issues, and we need, we could work on our relationships, but I think we're in a good position.

**MHA:** Tell me a little bit more about your role as Director of the lab.

**JH:** So, the Northeast Fisheries Science Center has distributed laboratories, um so, I'm Lab Director but I don't, I have very little authority. So I have direct authority over the people who I supervise, but I have no direct authority over other people who work at the lab who I do not supervise - the distributed. But I very much enjoy being Director because I can help create an environment which is conducive for everybody to do good work. So I find joy and reward out of that. I like it from that perspective.

**MHA:** And do you ever have challenges with some of the upper management?

**JH:** Oh yeah. All the time. That's the nature. We have challenges with upper management and we have challenges with everybody. Yeah, I mean... Yes. Being lab director but not supervisor is a challenge because I can't go to tell somebody to do something. So how do you use your position to convince somebody to do something when you don't have the authority to tell them to do something? So working in that system and navigating it, I've learned a lot about leadership because that's really what leadership is. Leading people when you don't necessarily have the authority to do it.

**MHA:** So who does have the authority?

**JH:** The Center Director. He has the authority over everyone who works in the center and then there's a deputy director, I haven't seen, thought of the organizational chart in a while. The deputy director has the authority over the division chiefs, um, and we've recently gone through a reorganization so, um, the division chiefs is still a little fluid, but the lab director doesn't necessarily align with a division chief. So that the lab director, there's this tension between this direct lines of authority and then responsibility for a facility.

**MHA:** I see. I think. [laughter] It's a little confusing.

**JH:** It is a little confusing, but when I worked in the Southeast, the lab structure was part of the formal hierarchy. So the lab director was supervisor over everyone in the lab, so I think there's pros and cons to both models. But I think the Northeast model I would still argue works better because it is distributed so you can be a little more flexible. It can make more sense, you can move people around and not worry about the direct hierarchical line. And so I think the distributed model works better, but it's just a little more complicated.

**MHA:** How about budgeting though. Are you able to control who gets what at all in terms of the budget?

**JH:** In the branch for which I am the supervisor, yes. For the laboratory, no.

**MHA:** That would be challenging.

**JH:** Yeah. But the facility manager, at Narragansett, Ron Guilmette, he and I have an excellent relationship, so if he's putting together his plan for the lab for the next year, we sit down, talk about it, go back and forth, come up with priorities. He could just leave me out of it, but we work. Leadership at the lab, it's people from all different parts, if you look at the organization, we are from all different parts of the organization but I think we all work well together. From my own perspective, it's emphasizing the importance of relationships and not simply authority.

**MHA:** Which brings up the question of trying to get all these multidisciplines together in some sense? To focus on an issue?

**JH:** It's the same thing. To work on a problem that requires working across disciplines and across institutions, you don't have authority to do that, so how do you do that? It's relationships.

**MHA:** So, in academia I've run into people talking about how difficult it is to be in really a multi disciplinary partly because the different departments like it when you publish in your own disciplines not across disciplines, not in multidisciplines. Do you find that true at all?

**JH:** I mean, so. I can't really speak to the academic. When I left graduate school, that's when I left academia, but I think in marine science I think it's more inter disciplinary than other sciences just by the nature. You go to graduate school, you have to take physical oceanography, chemical oceanography, biological oceanography and geological oceanography so that the idea that it's all integrated is there. Um. And then my advisor, Bob Cowen who is now head of the Hatfield Lab at Oregon State University, he's been interdisciplinary his whole career, and I think the other sort of challenge to interdisciplinary work is who's going to fund it. If you look at funding U.S., a lot of it is pretty stove pipe or channelized. So you have academic departments that are channelized and you have funding that are channelized. I think it does. It sort of forces people to do disciplinary work not interdisciplinary work. But I think in marine science there are more people who can do interdisciplinary work than some other scientific disciplines.

**MHA:** So at the lab itself you find that people are able to cross disciplines and work with each other.

**JH:** Yuh. Since it's based on relationships, it varies from individual to individual. Um but I think more and more people are seeing the value of working across disciplines. I think more and more people are willing to get involved. For my own perspective, fisheries, oceanography have recently started working with Lisa Colburn on sort of some of the social side. I find that very rewarding. And also to where we need to go in the future to sort of work the spectrum from physical climate change, you know, to changes

in human communities and economic systems. So starting to work with Lisa has been very rewarding. Now I can see how to bring that full spectrum to bear on the problem.

**MHA:** Good. Um, I guess, going back again a little bit to that whole issue of bring the groups together, is there a problem with budgeting when you have all these different disciplines trying to face, trying to solve a particular issue? I assume every group has their own budget.

**JH:** Yeah. I think from my perspective I would say that's why the distributed system works a little better. So I can go in to Lisa and talk with her about collaborating because we're not competing for the same, several layers up, we are competing the same budget, but it's several layers up so we're not in direct competition for the same budget. So that the budget piece is not in the way of working together. If your organization, if your location is strictly tied to your organization and then whatever you get the person next to you is not getting, it makes interdisciplinary work harder. Budget definitely slows it down. We still fund boxes in organizational charts; we don't fund connections between boxes on organization charts. So yeah, budget forces disciplinary work.

**MHA:** What do you think has been the most fascinating, rewarding, interesting part of either your research or your career in general?

**JH:** I like it all. I wouldn't pick one.

**MHA:** Okay [laughter]

**JH:** I like the administrative, some of the administrative stuff I could do without, but I like the administrative component of making a good workplace for people. I like the interdisciplinary research to sort of spread the spectrum of work that's done. I like the observational stuff that we do, routine monitoring. For me, right now, it's a near-perfect blend.

**MHA:** Not many people can say that. How about, when I asked you about interactions between different labs and science centers around the country, do you find there are any major differences in the way people work kind of the attitudes in general.

**JH:** I'm not sure about attitudes. One thing I'm always amazed by, that we all work for NOAA yet the rules we all, the NOAA rules that we all follow are different. We try not to point it out because you don't want to be told that you have to do something differently but you work with people in Alaska or the Southeast and they're following the same rules that you are, but they're very different. So it makes you wonder where some of these rules come from.

**MHA:** Do you think there personalities with the leaders?

**JH:** Yeah. Possibly. [chuckle] But in the back of my head I always question when I'm told you have to do this because it's a rule. Well, whose rule is it? I try not to ask that question too frequently.

**MHA:** So we've talked a little bit about some of the changes you have seen over time. I think that you are very diplomatic, it sounds like. [laughter]

**JH:** [laughter] I'm trying to be.

**MHA:** You don't have to answer, but [laughter]--

**JH:** I'll answer it, but I'll answer diplomatically.

**MHA:** --I'm just curious about the good, the bad, and the ugly that you have seen over time with NMFS.

**JH:** The good, the bad, and the ugly. It's a great place to work. The mission, it's very easy to believe in what we need to do. That's the good. I think the bad is it's a great place to work but I think that often leads us to forget that it's an organization, and organizations have failings. They tend to protect themselves and so the ugly is when you see the organization protect, not doing the right thing but protecting itself, as every organization will do. And so it's hard to keep your belief in the mission as you lose belief in your organization. That's diplomatic, I think.

**MHA:** That's great.

**JH:** Without examples. [laughter]

**MHA:** Good job. I don't think I could do the same [laughter]. One of the things that I'm also curious about is what NMFS role is nowadays where there is a lot of competition for marine space. Thinking about the wind energy and also even the shipping businesses.

**JH:** From my perspective, from where I sit, I think NMFS has been slow to respond. I think we've been comfortable thinking that we provide fisheries advice and that the councils are going to need fisheries advice and the regional office are going to need fisheries advice, and we've been slow to respond to the competition for ocean space. Fishermen are being not allowed to fish in certain areas for nothing that we have done and that's having effects, but I don't think that we have really fought hard for what those effects are on our science, our industry, on the human communities and economics. So I think we really need to pay more attention and get more involved in the coastal zone management that is happening, you know, whether you want to use the word or not, it's happening. And either we get involved and get our voice into the discussion, or we just continue to ignore it, and it will eventually we will be zoned out. You know the industry, fishing, wild-capture fisheries in the U.S. will be zoned out. So I think it's an area for engagement.

**MHA:** So um if you had your life to do over, your career to do over again, would you do anything differently?

**JH:** Uh no. I'm not a hind-sight player. I can only worry about what's coming up. Can't worry about what's behind me.

**MHA:** Well, what do you see for the future? What would you like to see in the future for yourself?

**JH:** I'm not sure I'm going to answer that question with the recorder on. [laughter]

**MHA:** [laughter] we could turn it off.

**JH:** No. I applied for the Northeast Fishing Center Director position. So, I see taking a more active role in leading, hopefully in NOAA Fisheries, but I'm interested in taking a step and getting more involved in leading broad science programs. So, if not Fisheries, then I don't know if I'll start looking somewhere else. That's how I see the future.

**MHA:** Do you get involved with students at all? At that level at all?

**JH:** Um. Yes. I can't advise students directly, but I'm adjunct to URI which is right across the street. I serve on students committee. I think students are an excellent way to keep current and I wish that NOAA Fisheries would engage with students more, but it's hard. Students need funding and the funding at a university, it's just hard to navigate. Every situation is distinct, so it's hard to come up with a general way to do it that works in every case. It takes effort. But I, I'm adjunct on student committee at Graduate School of Oceanography. I've done one or two at University of Massachusetts Dartmouth, and then I was in Beaufort, I was involved with the students, and then I have been co-teaching fisheries oceanography at GSO with Jeremy Collie. It's very rewarding to spend time with students and to be forced to think about things from different perspectives. I think that's one of the things, working for the government, you lose the constant influx of new perspectives so things can get a little staid. I think students and the university academic setting is a good way to keep things fresh and keep new ideas flowing.

**MHA:** And do you ever work with the Sea Grant Program anywhere?

**JH:** My dissertation work was Sea Grant funded so I've always had a soft spot for Sea Grant. And I try to work with them when I can, but when I was in North Carolina we did a little more work with them than I've done here. I think it's more sort of time and opportunity rather than anything else. I've written letters of support for people applying for Sea Grant funding MIT Sea Grant and Rhode Island Sea Grant but I haven't been directly involved.

**MHA:** I was just curious because one of the people we, that MIT supports, has done a lot of circulation modeling. I thought maybe oceanography would be related.

**JH:** Yeah, I mean, we're probably using... Is it Bob Beardsley and Changsheng Chen ?

**MHA:** Chen

**JH:** So yea, the ocean forecast model that we're using for river herring is Chen's forecast model. And we had, uh, a post doc at Woods Hole Oceanographic Institution working with us to use his hindcast model to evaluate its' ability to simulate stratification. So yes.

**MHA:** Well, I think I've gone through everything that I had planned to ask you.

**JH:** Okay

**MHA:** Is there anything else that you'd like to make sure we talk about?

**JH:** I don't think so. I think we covered a lot of things. So this is...what's the project?

**MHA:** This is the Voices from the Science Center.

**JH:** Voices from the Science Center. Okay

**MHA:** Which is related to, kind of an off-shoot of Voices from the Fishery. And so I guess there was some end of the year funding and in classic fashion [laughter]--

**JH:** Yeah, what we are going to do with it [laughter]

**MHA:** -- but it's not a total out-of-the-blue program because Patricia Pinto daSilva was very active in Voices from the Fisheries with Susan Abbott-Jamieson and a few other people. And so we talked about this ages years ago that we have to extend it beyond fishing, the whole group of stakeholders eventually.

**JH:** That would be great.

**MHA:** I was glad to be asked to do some interviews. I find it fascinating.

**JH:** It's interesting that you ask questions. You don't usually take time to sit and think about the questions which you asked. I think it's excellent to think about the questions, so thank you.

**MHA:** Thank you. I had a great time.